EEC
ENERGY ENVIRONMENTAL CONSULTING

350 West A Street, Suite 203
Casper, Wyoming 82601
307-234-3395 tel • 307-234-3396 fax
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May 27, 2015

Wyoming Department of Environmental Quality
Air Quality Division
Mr. Cole Anderson
O&G NSR Permitting
Herschler Building, 2E
122 W. 25th Street
Cheyenne, WY 82002

Sent via Federal Express: Tracking #7736 9647 7514

Re: Oil and Gas Production Facility Air Permit Application
Bear Oil & Gas, Inc.
Armour Tank Battery
Laramie County, Wyoming

Dear Mr. Anderson:

Enclosed please find an application package consisting of one (1) paper copy with original signature and one (1) electronic copy for the Armour Tank Battery which was prepared following the Air Quality Rules and Regulations Oil and Gas Production Facilities Chapter 6, Section 2 Permitting Guidance Revised September 2013. The Armour 41-17 well location includes an Arrow A-54/VRG 330 pumping unit engine that is currently permitted under Air Quality Permit wv-16641-1. The Armour 42-17 includes a pumping unit engine being proposed under separate application.

The average daily production volumes for the Armour 41-17 as reported to the Oil & Gas Commission were added to the estimated production volumes for the Armour 42-17 and a decline factor of 0.6 applied to perform the emission calculations included with this application. The API E&P TANKS v3.0 program did not return emissions for storage tanks based on the production volume, oil composition, and operating conditions. Alternatively, the Vasquez-Beggs Method was used for tank flashing and the EPA TANKS 4.0.9d program was used to compute the S/W/B losses. Production volumes used for these calculations were the projected volumes using the decline factor. Copies of all the referenced reports are included with this application.

Reviewer HmB
cc:
Modeler
D.E.
File A0001144
IMP FID 26886

Thank you for your assistance with this permit application. If you have any questions or require additional information please contact Energy Environmental Consulting at (307) 234-3395 or by email to Diana Sojourner at DianaS@eecwyo.com or Thomas Jaap at TomJ@eecwyo.com.

Sincerely,

Diana Sojourner

Diana Sojourner
Environmental Specialist

cc: John Kelly, Bear Oil & Gas, Inc.

Enclosures: Application Package with Original Signature
CD with complete application as a PDF and Excel Application Forms

Revised 1/22/2015

DEQ
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Air Quality Division

New Source Review Permit Application Form

Is this an addendum to an existing application?

Yes _____ No X Date of Application: 5/19/2015

Previous Application #: _____

COMPANY INFORMATION:

Company Name: Bear Oil and Gas, Inc.
Address: 730 17th Street, Suite 450
City: Denver State: Colorado Zip Code: 80202
Country: USA Phone Number: 720-946-6700

FACILITY INFORMATION:

Facility Name: Armour Tank Battery
New Facility or Existing Facility: Existing
Facility Description: Tank Battery Facility
Facility Class: Minor Operating Status: Operating
Facility Type: Production Site

For Oil & Gas Production Sites ONLY:
First Date of Production (FDOP)/Date of Modification: 9/23/2014
Does production at this facility contain H2S?* No
If yes, contact the Division.
API Number(s): 49-021-21452; 49-021-21480

NAICS Code: 211111 Crude Petroleum and Natural Gas Extraction

FACILITY LOCATION:

***Enter the facility location in either the latitude/longitude area or section/township/range area. Both are not required.**

Physical Address: _____
City: _____ Zip Code: _____
State: WY County: _____

OR

Latitude: 41.357162°N Longitude: -104.100121°W County: Laramie
Quarter Quarter: _____ Quarter: _____
Section: _____ Township: _____ Range: _____

For longitude and latitude, use NAD 83/WGS84 datum and 5 digits after the decimal (i.e. 41.12345, -107.56789)

CONTACT INFORMATION:

***Note that an Environmental AND NSR Permitting Contact is required for your application to be deemed complete by the agency.**

Title: Mr. First Name: John
Last Name: Kelly
Company Name: Edward Mike Davis, LLC
Job Title: Landman
Address: 730 17th Street, Suite 450
City: Denver State: Colorado
Zip Code: 80202
Primary Phone No.: 720-946-6700 E-mail: john@emdllc.com
Mobile Phone No.: 720-810-2244 Fax No.: 720-946-6801
Contact Type: Responsible Official Start Date: _____

Revised 1/22/2015

Additional Contact Type (if needed): NSR Permitting contact
Title: First Name: Same as above
Last Name:
Company Name:
Job Title:
Address:
City: State:
Zip Code:
Primary Phone No.: E-mail:
Mobile Phone No.: Fax No.:
Contact Type: Start Date:

FACILITY APPLICATION INFORMATION:

General Info:

Has the facility changed location or is it a new/ greenfield facility?	Yes
Has a Land Use Planning document been included in this application?	No
Is the facility located in a sage grouse core area?*	No
If the facility is in a sage grouse core area, what is the WER number?	

** For questions about sage grouse core area, contact WY Game & Fish Department.*

Federal Rules Applicability - Facility Level:

Prevention of Significant Deterioration (PSD):	No
Non-Attainment New Source Review:	No

Modeling Section:

Has the Air Quality Division been contacted to determine if modeling is required?	No
Is a modeling analysis part of this application?	No
Is the proposed project subject to Prevention of Significant Deterioration (PSD) requirements?	No
Has the Air Quality Division been notified to schedule a pre-application meeting?	No
Has a modeling protocol been submitted to and approved by the Air Quality Division?	No
Has the Air Quality Division received a Q/D analysis to submit to the respective FLMs to determine the need for an AQRV analysis?	No

Required Attachments:

Facility Map	☑
Process Flow Diagram	☑
Modeling Analysis (if applicable)	☐
Land Use Planning Document	☐
Detailed Project Description	☑
Emissions Calculations	☑

I, John F. Kelly — Landman
Responsible Official (Printed Name) — Title

an Official Representative of the Company, state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further certify that the operational information provided and emission rates listed on this application reflect the anticipated emissions due to the operation of this facility. The facility will operate in compliance with all applicable Wyoming Air Quality Standards and Regulations.

Signature: John F Kelly (ink) Date: 5-19-15

Bear Oil & Gas, Inc.
Armour Tank Battery
NENE Section 17, T16N, R60W
Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

The Armour Tank Battery is located in the NENE quarter of Section 17, T16N, R60W in Laramie County within the Statewide area. This tank battery receives production from the Armour 41-17 well and will begin receiving production from the Armour 42-17 within the next month.

Equipment

Air emission sources shown on the attached Facility Diagram include the following:

- Four (4) 400 bbl crude oil aboveground storage tanks with vapors routed to an ECD;
- One (1) 0.5 MMBtu/hr tank heater fueled by produced gas;
- One (1) 48" Cimarron Emission Control Device (ECD) to control storage tank emissions;
- One (1) low pressure 3-phase 6'x20'vertical heater treater with a 0.75 MMBtu/hr burner fueled by produced gas;
- One (1) emergency flare;
- Truck loading; and
- One (1) Arrow A-54/VRG 330 pumping unit engine at the Armour 41-17 fueled by produced gas (currently permitted under **wv-16641-1**).
- One (1) pumping unit engine at the Armour 42-17 (proposed under separate application)

Process Description

The facility consists of a two (2) production wells. The Armour 41-17 pumping unit is powered by an Arrow A-54/VRG 330 with a site rated horsepower of 36.6-HP and a maximum rated horsepower of 68-HP. The engine is controlled with a non-selective catalytic reduction (NSCR) catalyst and air-fuel ratio controller (AFRC). The Armour 42-17 pumping unit will also be powered by a pumping unit engine.

Well production is routed to a low pressure 3-phase vertical heater treater for separation of crude oil, produced water, and gas. Crude oil is routed to four (4) 400 bbl storage tanks with tank vapors routed to an ECD. The ECD is a 48" standard with a Pad ARC ignition system and a data logger. Produced water from the treater is routed to one (1) 400 bbl aboveground storage tank. Crude oil and produced water are trucked off site as needed.

An emergency flare is located north of the process equipment for use during emergency or upset conditions. There are no pneumatic pumps or pneumatic controllers at this location. Produced gas is used to fuel the heater treater and tank heater burners and the pumping unit engines. The location of the equipment is shown on the attached Facility Plot Plan.

A crude oil analysis is attached. No H_2S was reported in the crude oil analysis; therefore, no SO_2 or H_2S emission calculations are included with this application.

Bear Oil & Gas, Inc.
Armour Tank Battery
NENE Section 17, T16N, R60W
Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

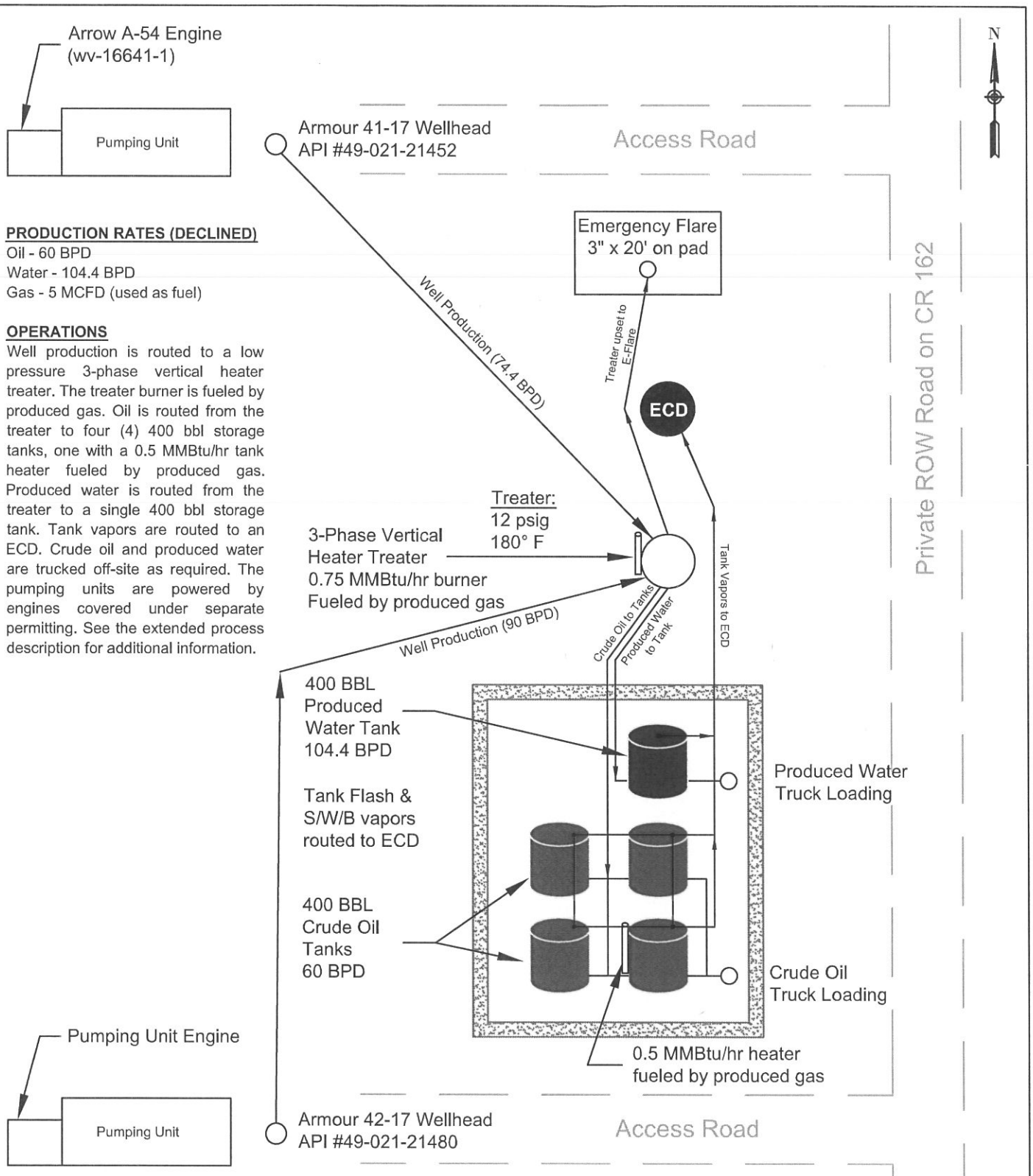
Production Rates

Estimated production quantities are as follows:

- Oil – 70 + 30 = 100 bbls/day average production rate
    - 60 bbls/day Estimated using the decline factor of 0.6
- Water – 54 + 120 = 174 bbls/day average production rate
    - 104.4 bbls/day Estimated using the decline factor of 0.6
- Gas – 5 Mcf/day (used to fuel on-site equipment)

Pertinent Dates

Armour 41-17 Pumping Unit Engine Installation:	9/22/2014
Armour 41-17 Date of first production:	9/26/2014
Armour 42-17 Pumping Unit Engine Installation:	5/31/2015 (estimated)
Armour 42-17 Date of first production:	5/31/2015 (estimated)



PRODUCTION RATES (DECLINED)
Oil - 60 BPD
Water - 104.4 BPD
Gas - 5 MCFD (used as fuel)

OPERATIONS
Well production is routed to a low pressure 3-phase vertical heater treater. The treater burner is fueled by produced gas. Oil is routed from the treater to four (4) 400 bbl storage tanks, one with a 0.5 MMBtu/hr tank heater fueled by produced gas. Produced water is routed from the treater to a single 400 bbl storage tank. Tank vapors are routed to an ECD. Crude oil and produced water are trucked off-site as required. The pumping units are powered by engines covered under separate permitting. See the extended process description for additional information.

LEGEND
Flowlines
Earthen Berms

FACILITY DIAGRAM
ARMOUR TANK BATTERY
LARAMIE COUNTY, WY
NENE SECTION 17
TOWNSHIP 16N, RANGE 60W

EEC ENERGY ENVIRONMENTAL CONSULTING
350 WEST A STREET, SUITE 203
CASPER, WY 82601
(307) 234-3395

COMPANY:
Bear Oil & Gas, Inc.
730 17th Street
Suite 450
Denver, CO 80202

FACILITY DIAGRAM
TO ACCOMPANY THE AIR PERMIT
APPLICATION FOR
ARMOUR TANK BATTERY

DRAWN BY	SIZE	JOB NO.	DWG NO.	REV
DRS	A	154-01	-------	0

DATE	SCALE	SHEET
May 2015	Not to Scale	1 OF 1

AMERICAN MOBILE RESEARCH, INC.

1955 CBS COURT
CASPER, WYOMING 82604

(307) 235-4590 OFFICE PHONE
(307) 265-4489 OFFICE FAX

EXTENDED HYDROCARBON GAS (GLYCALC) STUDY

CERTIFICATE OF ANALYSIS

Company ..... **BEAR OIL & GAS COMPANY**
Lab Number CR-15311
Date Sampled 1-26-2015
Study Number CR-1
Date Tested 2-2-2015

Sample Identification ..... **ARMOUR #41-17 GAS**
SE NE SECTION 17, TOWNSHIP 16N, RANGE 60W

Sample Location ..... WYOMING.
Sample Pressure ..... 11 PSIG
Type Sample ..... SPOT
Test Method GPA-2286
Sample Temperature ..... 174 F
County ..... LARAMIE
Moisture Content..... N/A

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide.....	1.154	1.418	0.813
Hydrogen Sulfide.....	0.000	0.000	0.000
Nitrogen.....	1.213	0.948	0.551
Methane.....	43.562	19.507	30.478
Ethane.....	9.705	8.146	10.711
Propane.....	20.862	25.678	23.720
iso-Butane.....	3.525	5.719	4.760
n-Butane.....	10.251	16.631	13.338
iso-Pentane.....	2.832	5.703	4.274
n-Pentane.....	2.803	5.645	4.193
Cyclopentane.....	0.174	0.341	0.213
n-Hexane.....	0.562	1.352	0.954
Cyclohexane.....	0.159	0.374	0.223
Other Hexanes	1.183	2.846	2.008
Heptanes.....	1.369	3.829	2.607
Methylcyclohexane.....	0.208	0.570	0.345
2,2,4-Trimethylpentane...	0.120	0.383	0.257
Benzene.....	0.046	0.100	0.053
Toluene.....	0.079	0.203	0.109
Ethylbenzene.....	0.008	0.024	0.013
Xylenes.....	0.021	0.062	0.034
C8+ Heavies.....	0.164	0.523	0.347
Totals	**100.000**	**100.000**	**100.000**

ADDITIONAL BETX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.174	0.341	0.213
Cyclohexane	0.159	0.374	0.223
2-Methylpentane	0.849	2.042	1.440
3-Methylpentane	0.334	0.804	0.567
n-Hexane	0.562	1.352	0.954
Methylcyclohexane	0.208	0.570	0.345
2,2,4-Trimethylpentane	0.120	0.383	0.257
Benzene	0.046	0.100	0.053
Toluene	0.079	0.203	0.109
Ethylbenzene	0.008	0.024	0.013
m-Xylene	0.003	0.009	0.005
p-Xylene	0.013	0.037	0.020
o-Xylene	0.005	0.016	0.008

SPECIFIC GRAVITY AT 60/60 F, calculated	1.2370
TOTAL GPM (ETHANE INCLUSIVE)	16.469
CALCULATED BTU / REAL CF AT 14.73 PSIA, dry basis	2056.181
CALCULATED BTU / REAL CF AT 14.73 PSIA, wet basis	2020.660
AVERAGE MOLECULAR WEIGHT	35.826
MOLAR MASS RATIO	1.2370
RELATIVE DENSITY (G x Z (Air) / Z), calculated	0.000
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF AT 14.696 PSIA, calculated	2027.424
COMPRESSIBILITY FACTOR (Z)	0.98828

PROPANE GPM	5.7327
BUTANE GPM	4.3741
GASOLINE GPM (PENTANE AND HEAVIER)	3.7734

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

James A. Kane, President
American Mobile Research, Inc.

AMERICAN MOBILE RESEARCH, INC.

P.O. BOX 2909
CASPER, WYOMING 82602

(307) 235-4590 PHONE
(307) 265-4489 FAX

EXTENDED HYDROCARBON (GLYCALC) LIQUID STUDY

CERTIFICATE OF ANALYSIS

Company ..... **BEAR OIL & GAS COMPANY**
Lab Number CR-15311
Date Sampled 1-26-2015

Study Number CR-2
Date Tested 2-5-2015

Sample Identification ..... **ARMOUR #41-17 PRESSURIZED CRUDE OIL**
SE NE SECTION 17, TOWNSHIP 16N, RANGE 60W

Sample Location ..... WYOMING.
Sample Pressure ..... 11 PSIG
Type Sample ..... SPOT
Test Method ..... GPA 2186

Sample Temperature ..... 174 F
County ..... LARAMIE
Sampling Method GPA-2174

Components	Mole %	Weight %	Liq. Vol. %
Hydrogen Sulfide	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000
Carbon Dioxide	0.005	0.001	0.001
Nitrogen	0.000	0.000	0.000
Methane	0.009	0.001	0.002
Ethane	0.047	0.008	0.017
Propane	0.593	0.148	0.226
iso-Butane	0.512	0.168	0.232
n-Butane	2.287	0.753	0.999
iso-Pentane	1.220	0.498	0.618
n-Pentane	1.589	0.649	0.798
Hexanes	1.364	0.665	0.777
Heptanes	4.832	2.741	3.087
Octanes	12.479	8.070	8.854
Nonanes	10.614	7.707	8.272
Decanes+	59.003	75.547	73.210
Benzene	0.228	0.101	0.088
Toluene	0.973	0.508	0.451
Ethylbenzene	0.457	0.275	0.244
Xylenes	2.381	1.431	1.281
n-Hexane	1.136	0.554	0.647
2,2,4-Trimethylpentane ...	0.271	0.175	0.195
Totals	100.000	100.000	100.000

ADDITIONAL BETX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	0.975	0.476	0.555
3-Methylpentane	0.389	0.190	0.221
n-Hexane	1.136	0.554	0.647
2,2,4-Trimethylpentane	0.271	0.175	0.195
Benzene	0.228	0.101	0.088
Toluene	0.973	0.508	0.451
Ethylbenzene	0.457	0.275	0.244
m-Xylene	0.357	0.215	0.192
p-Xylene	1.429	0.859	0.769
o-Xylene	0.595	0.358	0.320

API GRAVITY AT 60/60 F, calculated	51.0
SPECIFIC GRAVITY AT 60/60 F, calculated	0.77520
RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	0.79994
AVERAGE MOLECULAR WEIGHT	176.638
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	226.165
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	4.349
AVERAGE BOILING POINT, F, calculated	409.493
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	17.651
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	125,411.49
LBS / GALLON OF LIQUID, calculated	6.463

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

James A. Kane, President
American Mobile Research, Inc.

MERICAN MOBILE RESEARCH, INC.
). BOX 2909
SPER, WYOMING 82602
(307) 235-4590 PHONE
(307) 265-4489 FAX

EXTENDED HYDROCARBON LIQUID STUDIES

CERTIFICATE OF ANALYSIS

Company..... **BEAR OIL & GAS COMPANY**

Lab Number..... CR-15311
Date Sampled..... 1-26-2015
Study Number..... CR-3
Date Tested..... 2-5-2015

Sample Identification..... **ARMOUR #41-17 FLASHED CRUDE OIL**
SE NE SECTION 17, TOWNSHIP 16N, RANGE 60W
Sample Location.....WYOMING.
Sample Pressure..... ATMOSPHERIC
Sample Temperature... AMBIENT
Flowrate..... N/A
County.....LARAMIE
Test Method..... VARIOUS
Sample Container..... 1-QUART BOTTLE

TEST PERFORMED	RESULTS
API GRAVITY AT 60/60 F (ASTM D-287), observed	35.9
SPECIFIC GRAVITY AT 60/60 F (ASTM D-1657), calculated	0.8453
REID VAPOR PRESSURE (ASTM D-323), PSIG AT 100 F, observed	4.4
TOTAL SULFUR CONTENT (ASTM D-5453), PPMW	N/A
TRUE VAPOR PRESSURE (ASTM 2889), PSIA AT 100 F, observed	N/A
BASIC SEDIMENT AND WATER CONTENT (BSW), % BY VOLUME	N/A
COPPER STRIP CORROSION (ASTM D-130), 1 HOUR AT 100 F, observed	N/A
FREE WATER, observed	N/A

NOTATION : ALL TESTING PROVIDED ABOVE WAS PERFORMED IN ACCORDANCE TO METHODOLOGY OUTLINED BY THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

James A. Kane, President

American Mobile Research, Inc.

Bear Oil & Gas, Inc.
Armour Tank Battery
Laramie County - Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

Emissions Summary

Emission Source	NOx (TPY)	CO (TPY)	VOC (TPY)	HAP (TPY)	H_2S (TPY)	SO_2 (TPY)	Calculation Method	Calculations
Truck Loading	---	---	0.78	0.078	0.00	---	AQD Approved Calc Methods & Practices	Attached
Tanks	---	---	2.95	0.38	0.00	---	VB Equation (flashing) + EPA Tanks 4.0.9d (S/W/B)	Attached
Fugitive	---	---	1.91	0.28	0.00	---	AQD Approved Calc Methods & Practices	Attached
Tank Heater	0.03	0.02	---	---	---	0.00	AQD Approved Calc Methods & Practices	Attached
Heater Treater (vents)	---	---	---	---	---	---	N/A - Gas is routed to the pumping unit engines, and heater treater and tank heater burners for fuel	N/A
Heater Treater (burner)	0.65	0.55	---	---	---	0.00	AQD Approved Calc Methods & Practices	Attached
TOTAL	**0.68**	**0.57**	**5.64**	**0.74**	**0.00**	**0.00**		

NOTES: HAP emissions were assumed to be 10% of VOC emissions for truck loading and for storage tank S/W/B emissions.
No H_2S was reported in the crude oil analysis; therefore, no SO_2 or H_2S emission calculations are included with this application.
Emissions shown for each source are in accordance with those indicated on the table in the C6 S2 O&G Production Facilities Permitting Guidance, September 2013, Page 64 of 76.
For all emission calculations used in this application, actual production was used to determine the average production rate.

Revised 1/22/2015

Specific Emission Unit Attributes:

Loading/Unloading/Dump

Company Equipment ID: Armour Tank Battery Truck Loading
Company Equipment Description: Truck Loading

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)

Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Type of Material: Liquid
Material Description: Crude Oil

Maximum Annual Throughput: 21,900 Units: barrels/yr
Maximum Hourly Throughput: 2.5 Units: barrels/hr
Detailed Description of Loading/Unloading/Dump Source:
Truck loading of crude oil from aboveground storage tanks

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

40600132

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 2 (when loaded)
Hours/year: 200

Revised 1/22/2015

Control Equipment: No

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Truck Loading

Criteria Pollutants:

			Efficiency Standards				
		Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)	Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	0.78			0.18	0.78	Other
8.)	Lead (Pb)						
9.)	Total Hazardous Air Pollutants (HAPs)	0.078			0.018	0.078	Other
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)	0			0	0	Test results for this source
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.

Revised 1/22/2015

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Bear Oil & Gas, Inc.
Armour Tank Battery
Laramie County - Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

Truck Loading

$L_L = 12.46*S*P*M/T$

S (Saturation Factor)	0.6	Table 5.2-1
P (True vapor pressure)	2.3	Table 7.1-2
M (Molecular weight of tank vapors)	50	Table 7.1-2
Temperature of bulk liquid loaded= deg R (deg F+ 460)	510	Table 7.1-2 (50 + 460)
L_L	1.69	lb/1000 gallons loaded

Average Production = 1,825 bbl/mo
1,825 bbls = 76,650 gallons/month
Assumes 220 bbl Tank Truck at 2 hrs to load

VOC Emissions	**0.78 TPY**
HAP Emissions (assumed to be 10% of VOCs)	**0.078 TPY**

Revised 1/22/2015

Specific Emission Unit Attributes:

Storage Tank/Silo

Company Equipment ID: Armour Tank Battery Oil Storage Tanks
Company Equipment Description: Oil Storage Tanks

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)

Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Material Type: Liquid
Description of Material Stored: Crude Oil stored in 4 aboveground storage tanks

Capacity: 400 Units: barrels
Maximum Throughput: 60 Units: barrels/day
Maximum Hourly Throughput: 2.5 Units: barrels/hr
Operating Pressure (psig): 1
Vapor Pressure of Material Stored (psig): 4.349
Is Tank Heated?: No — 3 tanks are not heated
Yes — 1 tank is heated

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

40400312

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24
Hours/year: 8760

Revised 1/22/2015

Control Equipment: Yes

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Subject, but exempt

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: *OOOO*

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Oil Storage Tanks

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	2.95			0.67	2.95	Tanks Program
8.)	Lead (Pb)						
9.)	Total Hazardous Air Pollutants (HAPs)	0.38			0.09	0.38	Tanks Program
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)	0			0	0	Test results for this source
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.

Revised 1/22/2015

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

```
**********************************************************************************************
*     Project Setup Information                                                              *
**********************************************************************************************
Project File               : C:\Documents\Projects\154 Edward Mike Davis, LLC\154-01 Air Permitting\Armour 41-17 Fa
Flowsheet Selection        : Oil Tank with Separator
Calculation Method         : RVP Distillation
Control Efficiency         : 99.00%
Known Separator Stream     : Low Pressure Oil
Entering Air Composition   : No
Component Group            : C10+

Filed Name                 : WC
Well Name                  : Armour Tank Battery
Date                       : 2015.05.08


**********************************************************************************************
*     Data Input                                                                             *
**********************************************************************************************

Separator Pressure (psia)          : 12.00
Separator Temperature (F)          : 180.0
C10+ SG                            : 0.80
C10+ MW(lb/lbmol)                  : 226.16

-- Low Pressure Oil ------------------------------------------------------------------------
No.    Component            Mole%     Wt%
1      H2S                    0.0000    0.0000
2      O2                     0.0000    0.0000
3      CO2                    0.0050    0.0012
4      N2                     0.0000    0.0000
5      C1                     0.0090    0.0008
6      C2                     0.0470    0.0080
7      C3                     0.5930    0.1480
8      i-C4                   0.5120    0.1685
9      n-C4                   2.2870    0.7525
10     i-C5                   1.2200    0.4983
11     n-C5                   1.5890    0.6490
12     C6                     1.3640    0.6653
13     C7                     4.8320    2.7410
14     C8                    12.4790    8.0699
15     C9                    10.6140    7.7081
16     C10+                  59.0030   75.5456
17     Benzene                0.2280    0.1008
18     Toluene                0.9730    0.5075
19     E-Benzene              0.4570    0.2747
20     Xylenes                2.3810    1.4311
21     n-C6                   1.1360    0.5542
22     224Trimethylp          0.2710    0.1753

-- Sales Oil ------------------------------------------------------------------------------
Production Rate (bbl/day)      : 60.00
Days of Annual Operation       : 365
API Gravity                    : 35.90
Reid Vapor Pressure (psia)     : 4.40
Ambient Pressure (psia)        : 12.20
Ambient Temperature (F)        : 180.0


**********************************************************************************************
*     Calculation Results                                                                    *
**********************************************************************************************

-- Emission Summary ------------------------------------------------------------------------
                    Uncontrolled   Controlled
                     ton            ton
```

Total HAPs	0.0000	0.0000
Total HC	0.0000	0.0000
VOCs, C2+	0.0000	0.0000
VOCs, C3+	0.0000	0.0000
CO2	0.0000	
CH4	0.0000	

Uncontrolled Recovery Information:

Vapor(mscfd):	0.0000
HC Vapor(mscfd):	0.0000
CO2(mscfd):	0.0000
CH4(mscfd):	0.0000
GOR(SCF/STB):	0.0000

-- Emission Composition

No	Component	Uncontrolled ton	Controlled ton
1	H2S	0.0000	0.0000
2	O2	0.0000	0.0000
3	CO2	0.0000	0.0000
4	N2	0.0000	0.0000
5	C1	0.0000	0.0000
6	C2	0.0000	0.0000
7	C3	0.0000	0.0000
8	i-C4	0.0000	0.0000
9	n-C4	0.0000	0.0000
10	i-C5	0.0000	0.0000
11	n-C5	0.0000	0.0000
12	C6	0.0000	0.0000
13	Benzene	0.0000	0.0000
14	Toluene	0.0000	0.0000
15	E-Benzene	0.0000	0.0000
16	Xylenes	0.0000	0.0000
17	n-C6	0.0000	0.0000
18	224Trimethylp	0.0000	0.0000
19	Pseudo Comp1	0.0000	0.0000
20	Pseudo Comp2	0.0000	0.0000
21	Pseudo Comp3	0.0000	0.0000
22	Pseudo Comp4	0.0000	0.0000
23	Pseudo Comp5	0.0000	0.0000
24	Total	0.0000	0.0000

-- Stream Data

No	Component	MW lb/lbmol	LP Oil mole %	Flash Oil mole %	Sales Oil mole %	Flash Gas mole %	W&S Gas mole %	Total Emission mole %
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.0050	0.0050	0.0050	0.0000	0.0000	0.0000
4	N2	28.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	C1	16.04	0.0090	0.0090	0.0090	0.0000	0.0000	0.0000
6	C2	30.07	0.0470	0.0470	0.0470	0.0000	0.0000	0.0000
7	C3	44.10	0.5930	0.5930	0.5930	0.0000	0.0000	0.0000
8	i-C4	58.12	0.5120	0.5120	0.5120	0.0000	0.0000	0.0000
9	n-C4	58.12	2.2870	2.2870	2.2870	0.0000	0.0000	0.0000
10	i-C5	72.15	1.2200	1.2200	1.2200	0.0000	0.0000	0.0000
11	n-C5	72.15	1.5890	1.5890	1.5890	0.0000	0.0000	0.0000
12	C6	84.00	1.3640	1.3640	1.3640	0.0000	0.0000	0.0000
13	Benzene	78.11	0.2280	0.2280	0.2280	0.0000	0.0000	0.0000
14	Toluene	92.14	0.9730	0.9730	0.9730	0.0000	0.0000	0.0000
15	E-Benzene	106.17	0.4570	0.4570	0.4570	0.0000	0.0000	0.0000
16	Xylenes	106.17	2.3810	2.3810	2.3810	0.0000	0.0000	0.0000
17	n-C6	86.18	1.1360	1.1360	1.1360	0.0000	0.0000	0.0000
18	224Trimethylp	114.23	0.2710	0.2710	0.2710	0.0000	0.0000	0.0000
19	Pseudo Comp1	115.60	35.7949	35.7949	35.7949	0.0000	0.0000	0.0000
20	Pseudo Comp2	159.67	17.8530	17.8530	17.8530	0.0000	0.0000	0.0000
21	Pseudo Comp3	210.95	14.5092	14.5092	14.5092	0.0000	0.0000	0.0000
22	Pseudo Comp4	282.94	11.8810	11.8810	11.8810	0.0000	0.0000	0.0000

23 Pseudo Comp5 436.46	6.8899	6.8899	6.8899	0.0000	0.0000	0.0000

	LP Oil	Flash Oil	Sales Oil	Flash Gas	W&S Gas	Total Emission
MW (lb/lbmol):	174.63	174.63	174.63	0.00	0.00	0.00
Stream Mole Ratio:	1.0000	1.0000	1.0000			
Stream Weight Ratio:	174.63	174.63	174.63			
Total Emission (ton):						
Heating Value (BTU/scf):						
Gas Gravity (Gas/Air):						
Bubble Pt. @100F (psia):	3.77	3.77	3.77			
RVP @100F (psia):	2.89	2.89	2.89			
Spec. Gravity @100F:	0.74	0.74	0.74			

Company Name: Bear Oil & Gas, Inc.
Facility Name: Armour Tank Battery

Volatile Organic Compound Emission Calculation for Flashing

Vasquez - Beggs Solution Gas/Oil Ratio Correlation Method

(For Estimating Flashing Emissions, Using Stock Tank Gas-Oil Ratios For Crude Oil Facilities)

INPUTS:

Stock Tank API Gravity	35.9	**30**
Treater Pressure (psig)	12	**Pi**
Treater Temperature (F)	180	**Ti**
Separator Gas Gravity	1.18	**SGi**
Stock Tank Barrels of Oil per day (BOPD)	60	**Q**
Stock Tank Gas Molecular Weight (lb/lb-mol)	36	**MW**
VOC Weight Fraction of Stock Tank Gas	0.70	**VOC**
HAP Weight Fraction of Stock Tank Gas	0.10	**HAP**
Atmospheric Pressure (psia)	12.2	**Patm**

CONSTRAINTS:

crude oil gravity < 40 degrees API
operating pressure < 5250 psia
operating temperature < 295 degrees F
SG between 0.56 and 1.18

MW between 14 and 125 lb/lb-mol

Rs = (C1 * SGx * (Pi + Patm)^C2) exp ((C3 * API) / (Ti + 460))

Where:

Rs = Gas/Oil Ratio of liquid at pressure of interest
SGx = Dissolved gas gravity at 100 psig
Pi = Pressure of initial condition (psia)
API = API Gravity of liquid hydrocarbon at final condition
Ti = Temperature of initial condition (F)

Constants		API Gravity < 30	API Gravity >= 30
C1	=	0.0362	0.0178
C2	=	1.0937	1.187
C3	=	25.724	23.931

SGx = Dissolved gas gravity at 100 psig
= SGi [1.0+0.00005912*API*Ti*Log((Pi + Patm)/100 + Patm)]

SGi = Gas gravity at initial condition

SGx = 0.88

for the above API Gravity input, C1 = 0.0178
C2 = 1.187
C3 = 23.931

Rs = 2.63 **scf/bbl** *for P + Patm =* 24.2

THC = Rs * Q * MW * 1/385 scf/lb-mole * 365 D/Yr * 1 ton/2000 lb.s

THC = Total Hydrocarbon (tons/year)
Rs = Solution Gas/Oil Ratio (scf/STB)
Q = Oil Production Rate (bbl/day)
MW = Molecular Weight of Stock Tank Gas (lb/lb-mole)
385 = Volume of 1 lb-mole of gas at 14.7 psia and 68 F (WAQS&R Std Cond)

THC = 2.7 **TPY**

VOC = THC * Frac. of VOC in the Stock Tank Vapor

VOC 1.88 **TPY**

HAP = THC * Frac. of HAP in the Stock Tank Vapor

HAP 0.27 **TPY**

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Armour Tank Battery
City:	Pine Bluffs
State:	Wyoming
Company:	Bear Oil & Gas, Inc.
Type of Tank:	Vertical Fixed Roof Tank
Description:	Four (4) 400 bbl Oil Storage Tanks

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	20.00
Avg. Liquid Height (ft):	15.00
Volume (gallons):	16,920.59
Turnovers:	54.36
Net Throughput(gal/yr):	919,800.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Cheyenne, Wyoming (Avg Atmospheric Pressure = 11.76 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Armour Tank Battery - Vertical Fixed Roof Tank
Pine Bluffs, Wyoming

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude oil (RVP 5)	All	54.86	43.72	65.99	48.68	2.5988	2.0689	3.2330	50.0000			207.00	Option 4: RVP=5

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

Armour Tank Battery - Vertical Fixed Roof Tank
Pine Bluffs, Wyoming

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude oil (RVP 5)	1,533.54	604.43	2,137.97

Revised 1/22/2015

Specific Emission Unit Attributes:

Heater/Chiller

Company Equipment ID: Armour Tank Battery Tank Heater
Company Equipment Description: Tank Heater

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)
Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Firing Type: Direct
Heat Input Rating: 0.5 Units: MMBtu/hr
Primary Fuel Type: Field Gas
Secondary Fuel Type:
Heat Content of Fuel: 2056 Units: BTU/scf
Fuel Sulfur Content: 0 Units: ppm

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31000128

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24 (when in use)
Hours/year: 576

Revised 1/22/2015

Control Equipment: No

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Storage Tank Heater

Criteria Pollutants:

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)	0			0	0	Test results for this source
5.)	Nitrogen Oxides (NOx)	0.03			0.007	0.03	Other
6.)	Carbon monoxide (CO)	0.02			0.005	0.02	Other
7.)	Volatile organic compounds (VOC)						
8.)	Lead (Pb)						
9.)	Total Hazardous Air Pollutants (HAPs)						
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.

Revised 1/22/2015

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

			Efficiency Standards				
		Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)	Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Pollutants:							
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

			Efficiency Standards				
		Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)	Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Pollutants:							
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Bear Oil & Gas, Inc.
Armour Tank Battery
Laramie County - Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

Tank Heater

0.5 MMBtu/hr
2056 Btu/scf LHV Ratio = 2.02
Fueled by produced gas
576 Annual Operating Hours (worse case)
70 VOC weight %

Emission Factors (EF)[1]

NOx	100 lb/MMcf
CO	84 lb/MMcf
TOC	11 lb/MMcf

Pollutant	Burner Rating (MMBtu/hr)	EF (lb/MMcf)	1 MMcf/1020 MMBtu	LHV ratio	Emissions (lb/hr)	Ton/yr
NOx	0.5	100	0.001	2.02	0.099	**0.03**
CO	0.5	84	0.001	2.02	0.083	**0.02**
TOC	0.5	11	0.001	2.02	0.011	**0.003**
VOC	0.5	11	0.001	2.02	0.008	**0.002**

[1] C6 S2 O&G Production Facilities Permitting Guidance, September 2013, Page 66 of 76

Revised 1/22/2015

Specific Emission Unit Attributes:

Storage Tank/Silo

Company Equipment ID: Armour Tank Battery Produced Water Storage Tank
Company Equipment Description: Produced Water Storage Tank

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)

Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Material Type: Liquid
Description of Material Stored: Produced Water stored in 1 aboveground storage tank

Capacity: 400 Units: barrels
Maximum Throughput: 104.4 Units: barrels/day
Maximum Hourly Throughput: 4.35 Units: barrels/hr
Operating Pressure (psig): 1
Vapor Pressure of Material Stored (psig): 1
Is Tank Heated?: No

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

40400315

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24
Hours/year: 8760

Control Equipment: Yes

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Revised 1/22/2015

Specific Emission Unit Attributes:

Fugitives

Company Equipment ID: Armour Tank Battery Fugitives
Company Equipment Description: Fugitive Emissions

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)

Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Type of Fugitive Emission: Fugitive Leaks at O&G

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31088811

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Revised 1/22/2015

Control Equipment: No

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Fugitives

Criteria Pollutants:

			Efficiency Standards				
		Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)	Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	1.91			0.44	1.91	Other
8.)	Lead (Pb)						
9.)	Total Hazardous Air Pollutants (HAPs)	0.28			0.06	0.28	Other
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)	0			0	0	Test results for this source
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.

Revised 1/22/2015

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Bear Oil & Gas, Inc.
Armour Tank Battery
Laramie County - Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

Fugitive Emissions

Equipment Type	Gas			Light Oil (>20°API)			Water/Light Oil			Facility Total (lb/day)	Facility Total (tons/yr)
	Qty [1]	EPA Emission Factor [2]	Total (lbs/day)	Qty [1]	EPA Emission Factor [2]	Total (lbs/day)	Qty [1]	EPA Emission	Total (lbs/day)		
Connector	14	0.011	0.154	60	0.011	0.66	10	0.0058	0.058	0.87	0.16
Flange	10	0.021	0.21	6	0.0058	0.0348	0	0.00015	0	0.24	0.04
Open ended line	0	0.11	0	6	0.074	0.444	0	0.013	0	0.44	0.08
Other	6	0.47	2.82	10	0.4	4	0	0.74	0	6.82	1.24
Pump	0	0.13	0	1	0.69	0.69	0	0.0013	0	0.69	0.13
Valve	8	0.24	1.92	30	0.13	3.9	6	0.0052	0.0312	5.85	1.07
VOC Weight Fraction [3] =	**0.70**							**VOC EMISSIONS:**		**10.44**	**1.91**
HAP Weight Fraction [3] =	**0.10**							**HAP EMISSIONS:**		**1.52**	**0.28**

[1] Based on typical component count for facility type

[2] C6 S2 O&G Production Facilities Permitting Guidance, September 2013, Page 70 of 76

[3] Calculated actual measured weight fractions based on laboratory analysis

Gas = Treater/flare
Light Oil = All Others
Water/Light Oil = Produced Water Components

Revised 1/22/2015

Specific Emission Unit Attributes:

Separator/Treater

Company Equipment ID: Armour Tank Battery Heater Treater
Company Equipment Description: Heater Treater

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)

Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Type of Vessel: Heater-Treater Is Vessel Heated? Yes
Operating Temperature (F): 180
Operating Pressure (psig): 12

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31000107

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24
Hours/year: 8760

Revised 1/22/2015

Control Equipment: No

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Revised 1/22/2015

Specific Emission Unit Attributes:

Heater/Chiller

Company Equipment ID: Armour Tank Battery Heater Treater Burner
Company Equipment Description: Heater Treater Burner

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)
Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Firing Type: Direct
Heat Input Rating: 0.75 Units: MMBtu/hr
Primary Fuel Type: Field Gas
Secondary Fuel Type:
Heat Content of Fuel: 2056 Units: BTU/scf
Fuel Sulfur Content: 0 Units: ppm

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31000107

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24
Hours/year: 8760

Revised 1/22/2015

Control Equipment: No

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Revised 1/22/2015

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Heater Treater

Criteria Pollutants:

			Efficiency Standards				
		Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)	Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)	0			0	0	Test results for this source
5.)	Nitrogen Oxides (NOx)	0.65			0.15	0.65	Other
6.)	Carbon monoxide (CO)	0.55			0.13	0.55	Other
7.)	Volatile organic compounds (VOC)						
8.)	Lead (Pb)						
9.)	Total Hazardous Air Pollutants (HAPs)						
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.

Revised 1/22/2015

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Bear Oil & Gas, Inc.
Armour Tank Battery
Laramie County - Statewide
Armour 41-17; API #49-021-21452
Armour 42-17; API #49-021-21480

Heater Treater

0.75 MMBtu/hr
2056 Btu/scf LHV Ratio = 2.02
Fueled by produced gas
8760 Annual Operating Hours (worse case)
70 VOC weight %

Emission Factors (EF)[1]

NOx	100 lb/MMcf
CO	84 lb/MMcf
TOC	11 lb/MMcf

Pollutant	Burner Rating (MMBtu/hr)	EF (lb/MMcf)	1 MMcf/1020 MMBtu	LHV ratio	Emissions (lb/hr)	Ton/yr
NOx	0.75	100	0.001	2.02	0.148	**0.65**
CO	0.75	84	0.001	2.02	0.124	**0.55**
TOC	0.75	11	0.001	2.02	0.016	**0.07**
VOC	0.75	11	0.001	2.02	0.011	**0.050**

[1] C6 S2 O&G Production Facilities Permitting Guidance, September 2013, Page 66 of 76

Revised 1/22/2015

Specific Emission Unit Attributes:

Flare

Company Equipment ID: Armour Tank Battery Emergency Flare
Company Equipment Description: Emergency Flare

Operating Status: Operating
Initial Construction Commencement Date:
Initial Operation Commencement Date: 9/23/2014
Most Recent Construction/ Modification Commencement Date: 5/31/2015 (estimated)

Most Recent Operation Commencement Date: 5/31/2015 (estimated)

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is ***Reconstruction*** or ***Temporary Permit*** or ***Other,*** please explain below:

Maximum Design Capacity (MMSCF/hr): 0.0002
Minimum Design Capacity (MMSCF/hr): 0
Pilot Gas Volume (scf/min):
Emergency Flare Only: Yes
Ignition Device Type: Other
Btu Content (Btu/scf): 2056
Smokeless Design:
Assist Gas Utilized? No
Continuously Monitored? No
Waste Gas Volume:
Units:
Installation Date: 9/23/2014

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31000160

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 0
Hours/year: 0

Control Equipment: No

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): Not Affected

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): Not Affected

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review: Not Affected

These rules are found under WAQSR Chapter 6, Section 13.

Revised 1/22/2015

Control Equipment:

Flare/Combustor

Manufacturer:	Cimarron	Date Installed:	9/23/2014
Model Name and Number:	48" Standard ECD	Company Control Equipment ID:	ECD
Company Control Equipment Description:	Armour Tank Battery ECD		

Pollutant(s) Controlled:

☐ CO	☐ NOx	☐ Pb	☐ SO2	☑ VOC	☐ PM	
☐ PM (FIL)	☐ PM Condensible	☐ PM 10 (FIL)	☐ PM 2.5 (FIL)	☐ PM 10	☐ PM 2.5	
☐ Other						

NOTE: The following fields require numeric values unless otherwise denoted with an asterisk*

Maximum Design Capacity (MMSCF/hr):	0.00125		
Minimum Design Capacity (MMSCF/hr):	0.0002		
Design Control Efficiency (%):	99	Capture Efficiency (%):	
Operating Control Efficiency (%):			
Flare Type:*	Enclosed	**Elevated Flare Type:***	
Ignition Device:*	Yes	**Flame Presence Sensor:***	Yes
Inlet Gas Temp (F):	65	**Flame Presence Type:***	Other
Gas Flow Rate (acfm):		Outlet Gas Temp (F):	

☑ This is the only control equipment on this air contaminant source

If not, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List all other emission units that are also vented to this control equipment:* Oil Storage Tanks; Produced Water Storage Tank

List all release point IDs associated with this control equipment:* ECD

Revised 1/22/2015

Release Point Information:

Complete the table below for ***each*** release point. Please include release point information for each emission unit. Multiple attachments may be necessary. A release point is a point at which emissions from an emission unit are released into the ambient (outside)air. List each individual release point on a separate pair of lines (release point ID and description). ***For longitude and latitude, use NAD 83/WGS84 datum and 5 digits after the decimal (i.e. 41.12345, -107.56789)***

Stack Release Point Information		
Company Release Point ID:	Release Point Type:	Vertical
Armour Tank Battery Heater Treater	Release Point Latitude:	41.357162°N
	Release Point Longitude:	-104.100121°W
Company Release Point Description:	Base Elevation (ft):	5308
Heater Treater	Stack Height (ft):	20
	Stack Diameter (ft):	1.5
	Exit Gas Velocity (ft/s):	0.13
	Exit Gas Temp (F):	Unknown
	Exit Gas Flow Rate (acfm):	6.1
Company Release Point ID:	Release Point Type:	Vertical
Armour Tank Battery ECD	Release Point Latitude:	41.357299°N
	Release Point Longitude:	-104.100114°W
Company Release Point Description:	Base Elevation (ft):	5308
ECD	Stack Height (ft):	12
	Stack Diameter (ft):	4
	Exit Gas Velocity (ft/s):	0.11
	Exit Gas Temp (F):	Unknown
	Exit Gas Flow Rate (acfm):	79.9
Company Release Point ID:	Release Point Type:	Vertical
Armour Tank Battery Oil Storage Tank Heater	Release Point Latitude:	41.356826°N
	Release Point Longitude:	-104.100122°W
Company Release Point Description:	Base Elevation (ft):	5308
Oil Storage Tank Heater	Stack Height (ft):	20
	Stack Diameter (ft):	1.5
	Exit Gas Velocity (ft/s):	0.09
	Exit Gas Temp (F):	Unknown
	Exit Gas Flow Rate (acfm):	4.1
Company Release Point ID:	Release Point Type:	
	Release Point Latitude:	
	Release Point Longitude:	
Company Release Point Description:	Base Elevation (ft):	
	Stack Height (ft):	
	Stack Diameter (ft):	
	Exit Gas Velocity (ft/s):	
	Exit Gas Temp (F):	
	Exit Gas Flow Rate (acfm):	

Revised 1/22/2015

Complete the table below for each fugitive (area, volume, line) release point. List each individual release point on a separate line.

Fugitive Release Point Information	
Company Release Point ID: Armour Tank Battery Fugitives Company Release Point Description: Facility Fugitive Emissions	Release Point Latitude: 41.357162°N Release Point Longitude: -104.100121°W Release Height (ft): 0 - 20
Company Release Point ID: Company Release Point Description:	Release Point Latitude: Release Point Longitude: Release Height (ft):
Company Release Point ID: Company Release Point Description:	Release Point Latitude: Release Point Longitude: Release Height (ft):
Company Release Point ID: Company Release Point Description:	Release Point Latitude: Release Point Longitude: Release Height (ft):